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THE MUSICAL TIMES, And Singing Class Circular.

DECEMBER 1st, 1862.

A DRAUGHT FOR THE PARTICULAR HISTORY OF PHONICS: OR, THE DOCTRINE OF SOUND AND HEARING.

From LORD BACON'S "SYLVA SYLVARUM."

(Continued from page 333.)

SECTION XV.

OF THE FIGURES OF THE CONCAVES, OR BODIES
THROUGH WHICH SOUNDS ARE CONVEYED.

The figure of a bell partakes of the inverted, truncate pyramid, but comes off and dilates more suddenly. The figure of the huntsman's horn and cornet is oblique, though there are likewise straight horns, which if of the same bore with the crooked ones differ little in sound, though the straight ones require a somewhat stronger blast. The figures of recorders and pipes are straight, but the recorder has a less bore above and a greater below. The trumpet has the figure of the letter S, which makes the purling sound, &c. Generally the straight line makes the clearest and roundest sound, and the crooked the more hoarse and jarring.

Trial should be made with a sinuous pipe, having four flexures; as also with a pipe made in the form of a cross, and open in the middle; and again with an angular pipe, to see what would be the effects of their several sounds. Try likewise a circular pipe, made perfectly round, with a hole to blow in, and another not far from that, but with a tranverse, or stop between them, so that the breath may go the round of the circle, and issue at the second hole.

Percussions may be likewise tried in solid bodies of several figures, as globes, flats, cubes, crosses, triangles, &c., and their combinations, as flat against flat, convex against convex, convex against flat, &c., to show the diversities of the sounds they produce. Try also the difference of sounds in several thicknesses of hard bodies when struck. I have tried that a bell of gold yields an excellent sound, not inferior to one of silver or brass, but rather better; yet a piece of gold coin sounds much flatter than a piece of silver.

The harp has its concave running cross-wise to the strings, and no instrument yields so melting and prolonged a sound as the Irish harp. So that if a virginal were made with a double concave, the one all the length, as the virginal has, the other at the end of the strings, as the harp has, it might make the sound more perfect, or not so shallow and jarring. It may be tried without any sound-board along, but only harp-wise at one end of the strings; or lastly, with a double concave, one at each end of the strings.

SECTION XVI.

OF THE MIXTURE OF SOUNDS.

There is an apparent diversity between visible and audible species in this, that the visible do not mix in the medium, but the audible do; for we can see a number of trees, hills, men and beasts, at once, without the one confounding the other; but if so many sounds came from several parts, they would utterly confound each other. Thus voices, or concerts of music, make harmony by mixture, which colours do not. It is true, indeed, that a great light drowns a smaller, as the sun does that of a glow-worm, and a great sound drowns a less. So likewise if there were two glass lanterns, the one of a crimson colour, the other of an azure, and a candle were included in each, I suppose these coloured lights would mix and cast a purple colour upon white paper. And even colours yield a faint and weak mixture, for white walls make rooms more lightsome than black. But the confusion in sounds, and the distinctness of visible objects proceeds from hence, that the vision is made in right lines, by means of several distinct cones of rays, whence there can be no coincidence in the eye, or visual point; whereas sounds, that move in oblique and crooked lines, must needs meet and disturb one another.

The sweetest and best harmony is made when every part or instrument is not heard by itself, but a general consent of them all, which requires the audience to be at some distance, after the same manner as the mixture of perfumes is received, or the smells of several flowers in the air. The disposition of the air, as to other qualities, unless joined with sound, has no great effect upon sounds; for whether the air be light or dark, hot or cold, in silent motion or at rest, sweet or fœtid, &c., this can make only some petty alteration; but sounds disturb and alter one another, sometimes by drowning, sometimes by jarring and discording, and sometimes by confounding with each other, and sometimes the one mixes and compounds with the other, and makes harmony.

Two voices of the same loudness will not be heard twice as far as one of them alone; and two candles of equal light will not render things visible twice as far as one. The cause lies deep, but it should seem that the impressions from the objects of the senses mix respectively, every one with its kind, but not in proportion; the reason may be that the first impression, which is from privative to active, as from silence to noise, or from darkness to light, is a greater degree than from less noise to more noise, or from less light to more light. The reason of this again may be, that the air, after it has received a charge, does not receive a greater charge with the same appetite as at first. But to determine the increase of virtues in proportion to the increase of matter, is a large field that requires a particular treatment.

SECTION XVII.

OF THE MELIORATION OF SOUNDS.

All concurrent reflections make sounds greater ; but if the body that gives the original sound, or the reflection, be clean and smooth, it makes them sweeter. Trial may be made in a lute or viol, with the belly of polished brass, instead of wood ; we find even in the open air that the wire-string is sweeter than the gut-string. And for reflection, water excels ; as we find in music near a river, and in echoes. It has been tried that a pipe a little moistened on the inside, yet so as to leave no drops, makes a more solemn sound than if the pipe were dry, yet with a sweet degree of purling ; for all porous things, by being moist, or, as it were, in a state between dry and wet, become a little more even and smooth ; but the purling, which proceeds from inequality, I take to be caused between the smoothness of the inward surface of the pipe, which is wet, and the rest of the wood of the pipe, to which the wet does not reach.

Music within doors sounds better in frosty weather, perhaps not so much from the disposition of the air as of the wood or string of the instrument, which is thus made more crisp, and thence more porous or hollow ; and we find that old lutes sound better than new ones, for the same reason ; so do lute-strings that have been long kept.

Sound is likewise meliorated by the mixing of open air with confined air. Trial, therefore, may be made of a lute or viol, with a double belly ; and another belly with a knot over the strings ; yet so as to leave scope enough for the strings to play below that belly. Trial may be likewise made of an Irish harp, with a concave on both sides ; though perhaps it might thus resound too much, whereby one note would overtake another. To sing in the hole of a drum makes the voice sweeter. So I conceive it would if a song in parts were sung in at several drums ; and for elegance sake, there might a curtain be drawn between the drums and the audience.

The sound created in a wind-instrument, between the breath and the air, is meliorated, by communicating with a more equal body of the pipe ; for there would doubtless be a different sound in a trumpet or pipe of wood, from that of a trumpet or pipe of brass. It were proper to try the effects of brass recorders and brass horns.

Sounds are meliorated by the intension of the sense, whilst the other senses are collected to the particular sense of hearing, and the sight suspended ; whence sounds are sweeter in the night than in the day, and I suppose sweeter to blind men than to others. And it is found that between sleeping and waking, when all the senses are bound, music is far sweeter than when one is full awake.

SECTION XVIII.

OF THE IMITATION OF SOUNDS.

It is strange, when attentively considered, how children and some birds learn to imitate speech.

They take no notice at all of the motion of the mouth ; for birds are as well taught in the dark as by light. The sounds of speech are very curious and exquisite ; whence one would think it were a lesson hard to learn. It is true, it is conquered with time, by degrees, and with many trials, but all this does not solve the wonder. It would almost make one think there is some transmission of spirits, and that the spirits of the teacher put in motion work with the spirits of the learner, a pre-disposition to imitate, and so to perfect the imitation by degrees. And for imitation, it is certain here is in men and other creatures a pre-disposition to imitate. How readily do apes and monkeys imitate all the motions of men ? and in the catching of dottrels, we see how the foolish bird plays the ape in gestures ; and no man, in effect, associates with others but he learns unawares some of their gesture, voice, or manner.

In the imitation of sounds, it is not necessary that man should be the teacher ; for birds will learn of one another, without any reward, as by feeding, or the like, given them in way of encouragement. Besides, parrots will not only imitate voices, but laughing, knocking, the squeaking of a door, or a cart-wheel, and any other noise they hear.

No brute can imitate the speech of man, but only birds ; for the ape, that is otherwise so ready to imitate, attains not to any degree of speech ; though there are dogs, which if a person howl in their ear, will fall a howling, and continue it a great while. This aptness of birds above beasts, in imitating the human speech, should be farther examined. Beasts have those parts which are accounted the organs of speech, as lips, teeth, &c., more like to men than birds have ; and for the neck, many beasts have it as long as birds. What better gorge or apparatus birds have, may be farther inquired. The birds that are known to speak are parrots, pies, jays, daws, and ravens ; among which parrots have a hooked bill, the rest not.

But perhaps this aptness of birds lies not so much in the conformity of the organs of speech, as in their attention ; for speech must come by hearing and learning, and birds attend and mark sounds more than beasts, because they are naturally more delighted with them and practise them more, as appears from their singing. Those who teach birds to sing, keep them awake, to increase their attention. And cock birds among singing birds are always the better singers, perhaps because they are more lively, and listen more.

Assiduity and application in imitating voices, conduces much to imitation ; whence there are certain mimics who will represent the voices of players and others to the life. And there have been those who could counterfeit the distance of voices, so as that when they stand close by, you would think the speech came afar off. How this is done may be farther examined ; though I see no great use of it but for imposture.

(To be continued.)